

**PARTICLE DISPERSIONS****Patent number:** WO0132799**Publication date:** 2001-05-10**Inventor:** REITZ HARIKLIA DRIS; BI XIANGXIN; KAMBE NOBUYUKI; KUMAR SUJEET**Applicant:** NANOGRAM CORP (US)**Classification:**

**- international:** C09K3/14; C09G1/02; C09G1/04; C03C17/00; C03C8/20; C03C17/34; C09K11/08; C09K11/78; C09K11/70; H01J29/18; B32B5/16; B24D3/00; B23B27/00; C23C14/06; C01B31/00; C01B33/14; C01B33/20; C01F7/02; C01F17/00; C01G9/02; C01G19/02; C01G23/047; C01G25/02; C01G45/02; C01G49/02

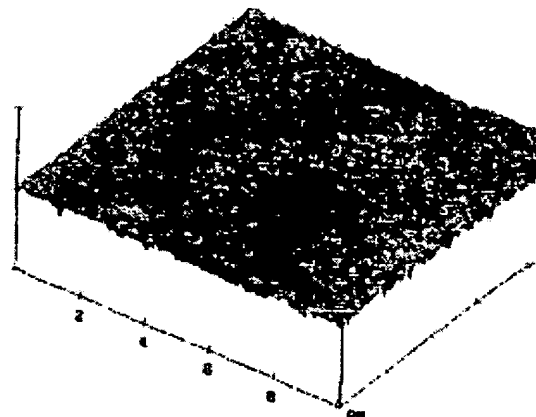
**- european:** C09D17/00J; C01B13/14; C01B31/00; C01B31/36; C01B33/14; C01B33/26; C01G1/02; C03C1/02; C03C12/00; C03C17/00; C09D7/12D2; C09G1/02; C09K3/14D2; C09K3/14D4; C23C16/44N; C23C16/448H; C23C16/48F

**Application number:** WO2000US30288 20001102**Priority number(s):** US19990433202 19991104**Cited documents**

US53  
US58  
US59  
US57  
US59  
more

**Abstract of WO0132799**

Improved particle dispersions are formed using nanoparticles with average primary particle diameters less than about 100 nm. The collection of nanoparticles in the dispersion have very narrow particles size distributions that do not have tails at larger particle sizes. In particular, the collection of nanoparticles effectively do not have primary particles with a diameter greater than three times the average particle diameter. The improved dispersions can be used in the formation of polishing compositions for chemical-mechanical polishing and in the production of thin coatings.

**RMS: 0.46 nm****R<sub>max</sub>: 5.76 nm****BEST AVAILABLE COPY**

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
10 May 2001 (10.05.2001)

PCT

(10) International Publication Number  
**WO 01/32799 A1**

(51) International Patent Classification<sup>7</sup>: **C09K 3/14**,  
C09G 1/02, 1/04, C03C 17/00, 8/20, 17/34, C09K 11/08,  
11/78, 11/70, H01J 29/18, B32B 5/16, B24D 3/00, B23B  
27/00, C23C 14/06, C01B 31/00, 33/14, 33/20, C01F 7/02,  
17/00, C01G 9/02, 19/02, 23/047, 25/02, 45/02, 49/02

840 Hobart Street, Menlo Park, CA 94025 (US). **KU-  
MAR, Sujeet**; 39800 Fremont Boulevard #206, Fremont,  
CA 94538 (US). **BI, Xiangxin**; 677 Graylyn Drive, San  
Ramon, CA 94583 (US).

(21) International Application Number: PCT/US00/30288

(74) Agents: **DARDI, Peter, S.** et al.; Westman, Champlin &  
Kelly, P.A., Suite 1600 - International Centre, 900 Second  
Avenue South, Minneapolis, MN 55402-3319 (US).

(22) International Filing Date:  
2 November 2000 (02.11.2000)

(81) Designated States (*national*): CN, IN, JP, KR.

(25) Filing Language: English

(84) Designated States (*regional*): European patent (AT, BE,  
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,  
NL, PT, SE, TR).

(26) Publication Language: English

(30) Priority Data:  
09/433,202 4 November 1999 (04.11.1999) US

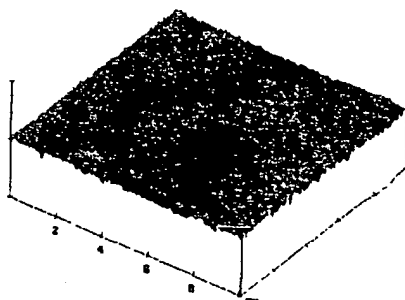
Published:  
— With international search report.

(71) Applicant: **NANOGRAM CORPORATION** [US/US];  
46774 Lakeview Boulevard, Fremont, CA 94538 (US).

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(72) Inventors: **REITZ, Hariklia, Dris**; 2147 Newhall Street  
#212, Santa Clara, CA 95050 (US). **KAMBE, Nobuyuki**;

(54) Title: PARTICLE DISPERSIONS



(57) Abstract: Improved particle dispersions are formed using nanopar-  
ticles with average primary particle diameters less than about 100 nm.  
The collection of nanoparticles in the dispersion have very narrow par-  
ticles size distributions that do not have tails at larger particle sizes. In  
particular, the collection of nanoparticles effectively do not have primary  
particles with a diameter greater than three times the average particle  
diameter. The improved dispersions can be used in the formation of pol-  
ishing compositions for chemical-mechanical polishing and in the pro-  
duction of thin coatings.

RMS: 0.46 nm  
 $R_{\max}$ : 5.76 nm

BEST AVAILABLE COPY

WO 01/32799 A1